



FEDERAL INFORMATION
PROCESSING STANDARDS PUBLICATION

1985 SEPTEMBER 30

U.S. DEPARTMENT OF COMMERCE/National Bureau of Standards



200 MM (8 IN) FLEXIBLE DISK
CARTRIDGE TRACK FORMAT USING
TWO-FREQUENCY RECORDING AT
6631 BPRAD ON ONE SIDE
- 1.9 TPMM (48 TPI)
FOR INFORMATION INTERCHANGE

JK CATEGORY: HARDWARE STANDARD
468 CATEGORY: INTERCHANGE CODES AND MEDIA

.A8A3
#114
1985

U.S. DEPARTMENT OF COMMERCE, Malcolm Baldrige, Secretary
NATIONAL BUREAU OF STANDARDS, Ernest Ambler, Director

Foreword

The Federal Information Processing Standards Publication Series of the National Bureau of Standards is the official publication relating to standards adopted and promulgated under the provisions of Public Law 89-306 (Brooks Act) and under Part 6 of Title 15, Code of Federal Regulations. These legislative and executive mandates have given the Secretary of Commerce important responsibilities for improving the utilization and management of computers and automatic data processing in the Federal Government. To carry out the Secretary's responsibilities, the NBS, through its Institute for Computer Sciences and Technology, provides leadership, technical guidance, and coordination of Government efforts in the development of guidelines and standards in these areas.

Comments concerning Federal Information Processing Standards Publications are welcome and should be addressed to the Director, Institute for Computer Sciences and Technology, National Bureau of Standards, Gaithersburg, MD 20899.

James H. Burrows, Director
Institute for Computer Sciences and Technology

Abstract

This standard prescribes a set of physical track format specifications for single-sided, single-density, 200 mm (8 in) flexible disk cartridges which have a data density of 6631 bits per radian (bprad) and 77 tracks at a track density of 1.9 tracks per millimeter (tpmm) (48 tracks per inch (tpi)). Citing these specifications will help to ensure that interchange parties can reliably interchange data files between information processing systems.

Key words: Computers; computer system hardware; data interchange; data processing; data processing equipment; flexible disk cartridges; information systems; magnetic recording; standards.

Natl.Bur.Stand. (U.S.) Fed.Info.Process.Stand.Publ. (FIPS PUB) 114, 4 pages.
(1985)

CODEN:FIPPAT

For sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161.



**Federal Information
Processing Standards Publication 114**

1985 September 30

Announcing the Standard for

**200 mm (8 in) Flexible Disk Cartridge Track Format
Using Two-Frequency Recording at 6631 bprad on
One Side - 1.9 tpmm (48 tpi) for Information Interchange**



Federal Information Processing Standards Publications are issued by the National Bureau of Standards pursuant to section 111(f)(2) of the Federal Property and Administrative Services Act of 1949, as amended, Public Law 89-306 (79 Stat. 1127), Executive Order 11717 (38 FR 12315, dated May 11, 1973) and Part 6 of Title 15 Code of Federal Regulations (CFR).

Name of Standard. 200 mm (8 in) Flexible Disk Cartridge Track Format Using Two-Frequency Recording at 6631 bprad on One Side - 1.9 tpmm (48 tpi) for Information Interchange (FIPS PUB 114).

Category of Standard. Hardware, Interchange Codes and Media.

Explanation. This standard prescribes a set of physical track format specifications for single-sided, single-density, 200 mm (8 in) flexible disk cartridges which have a data density of 6631 bits per radian (bprad) and 77 tracks at a track density of 1.9 tracks per millimeter (tpmm) (48 tracks per inch (tpi)). Citing these specifications will help to ensure that interchange parties can reliably interchange data files between information processing systems.

In order to ensure interchangeability of data between information processing systems by use of a physically removable medium, three distinct levels of compatibility specifications are necessary:

- 1) specifications for the unrecorded interchange medium (e.g., the flexible disk cartridge),
- 2) specifications for the physical track format (the specifications in this document),
- 3) specifications for the logical track format (FIPS PUB 113).

Interchange of text, rather than data files, requires other specifications, in addition to the above three levels.

The track format specifications contained in this standard are only for one type of flexible disk cartridge recording technology. Other Federal Information Processing Standards Publications (FIPS PUBS) specify physical track formats for other major types of flexible disk cartridge recording technology, and labelling and file structure (logical track format) specifications for use with all types of flexible disk cartridges.

This family of specifications was developed through the international voluntary industry standards process. In this process, the American National Standards Institute (ANSI) represents the United States. The National Bureau of Standards (Institute for Computer Sciences and Technology) has provided the international representative, whose job has been to focus and coordinate U.S. interests for ANSI during the development of these physical track format standards.

Maintenance Agency. Department of Commerce, National Bureau of Standards (Institute for Computer Sciences and Technology).

Cross Index. International Organization for Standardization (ISO) 5654/2, Data Interchange on 200 mm (8 in) Flexible Disk Cartridges Using Two-Frequency Recording at 13 262 ftprad on One Side - Part 2: Track Format.

Related Documents.

a. American National Standard Code for Information Interchange, X3.4-1977, FIPS PUB 1-2.

b. American National Standard Code Extension Techniques for Use with the 7-Bit Coded Character Set of American National Standard Code for Information Interchange, X3.41-1974, FIPS PUB 1-2.

c. American National Standard Additional Controls for Use with American Standard Code for Information Interchange, X3.64-1979, FIPS PUB 86.

d. American National Standard for Single-Sided Unformatted Flexible Disk Cartridge (for 6631-BPR Use), X3.73-1980.

Applicability. This standard is applicable to the acquisition and use of all recording and reproducing equipment employing 200 mm (8 in) flexible disk cartridges with the following characteristics: two-frequency recording at 6631 bprad on one side, and 77 tracks at a track density of 1.9 tpmm (48 tpi). Federal information processing systems employing such equipment, including associated software, should provide the capability to accept and generate recorded flexible disk cartridges in compliance with the requirements set forth in this standard. This standard should be used for the interchange of flexible disk cartridges unless the interchange parties can agree upon an alternate interchange format which is more efficient, convenient, and cost effective.

Specifications. This standard incorporates by reference (with qualifications as noted) the technical specifications of ISO 5654/2, Data Interchange on 200 mm (8 in) Flexible Disk Cartridges Using Two-Frequency Recording at 13 262 ftprad on One Side - Part 2: Track Format.

Qualifications.

a. ISO 5654/2 specifies the use of ISO 646, ISO 2022, and ISO 4873. For the purposes of this standard, American National Standard Code for Information Interchange, X3.4-1977 (defined in FIPS PUB 1-2), American National Standard Code Extension Techniques for Use with the 7-Bit Coded Character Set of American National Standard Code for Information Interchange, X3.41-1974 (defined in FIPS PUB 1-2), and American National Standard Additional Controls for Use with American Standard Code for Information Interchange, X3.64-1979 (defined in FIPS PUB 86) replace all references to ISO 646, 2022, and 4873.

b. After the first sentence in section 5.2.2.1 Track Address (T), of ISO 5654/2, add the following sentence: All tracks shall be recorded in the natural order (i.e., 00, 01, 02, . . . , 75, 76).

c. In ISO 5654/2, replace section 5.2.2.3 Sector Number (S) with the following section:

5.2.2.3 Sector Number (S). The third byte shall represent in binary notation the sector address from 01 for the first sector to 26 for the last sector. All sectors shall be recorded in the natural order (i.e., 01, 02, 03, . . . , 25, 26).

d. Replace section 3.2, Track Location Tolerance of the Recorded Flexible Disk Cartridge, in ISO 5654/2, with the following section:

3.2 Track Location Tolerance of the Recorded Flexible Disk Cartridge

The centrelines of the recorded tracks shall be within ± 0.085 mm (0.0033 in) of the nominal positions, when measured in the testing environment described in this section.

The testing environment shall consist of the following conditions:

temperature: $23 \pm 2^{\circ}\text{C}$ ($73 \pm 4^{\circ}\text{F}$)

relative humidity (RH): 40 to 60%

conditioning before testing: 24 hours minimum.

The temperature and the RH shall be measured in the air immediately surrounding the cartridge. The ambient stray magnetic field shall not exceed 4000 A/m (50 Oe).

- e. In section 5.2.2.1, Track Address (T), in ISO 5654/2, replace 76 with 74.
- f. In section 6.2.2.1, Track Address (T), in ISO 5654/2, replace 76 with 74.

Implementation Schedule. This standard becomes effective April 1, 1986. Use by Federal agencies is strongly recommended when such use contributes to operational benefits, efficiency, or economy.

Special Information. Each agency has the responsibility for the procurement of unrecorded, single-sided, single-density, 200 mm (8 in) flexible disk cartridges for use with this standard. American National Standard for Single-Sided Unformatted Flexible Disk Cartridge (for 6631 - BPR Use), X3.73-1980, may be cited in agency procurements. While X3.73-1980 is not intended to be sufficient by itself as a procurement specification document, it can serve as an important basis for specifying compatibility. Each agency can also utilize the General Services Administration multiple award schedule for flexible disk cartridges (FSC GROUP 70 PART I SECTION B Class 7045-0001).

Where to Obtain Copies. Copies of this publication are for sale by the National Technical Information Service, U.S. Department of Commerce, Springfield, Virginia 22161. (Sale of the included specifications document is by arrangement with the American National Standards Institute.) When ordering, refer to Federal Information Processing Standards Publication 114 (FIPS PUB 114), and title. Payment may be made by check, money order, purchase order, credit card, or deposit account.

NBS *Technical Publications*

Periodical

Journal of Research—The Journal of Research of the National Bureau of Standards reports NBS research and development in those disciplines of the physical and engineering sciences in which the Bureau is active. These include physics, chemistry, engineering, mathematics, and computer sciences. Papers cover a broad range of subjects, with major emphasis on measurement methodology and the basic technology underlying standardization. Also included from time to time are survey articles on topics closely related to the Bureau's technical and scientific programs. Issued six times a year.

Nonperiodicals

Monographs—Major contributions to the technical literature on various subjects related to the Bureau's scientific and technical activities.

Handbooks—Recommended codes of engineering and industrial practice (including safety codes) developed in cooperation with interested industries, professional organizations, and regulatory bodies.

Special Publications—Include proceedings of conferences sponsored by NBS, NBS annual reports, and other special publications appropriate to this grouping such as wall charts, pocket cards, and bibliographies.

Applied Mathematics Series—Mathematical tables, manuals, and studies of special interest to physicists, engineers, chemists, biologists, mathematicians, computer programmers, and others engaged in scientific and technical work.

National Standard Reference Data Series—Provides quantitative data on the physical and chemical properties of materials, compiled from the world's literature and critically evaluated. Developed under a worldwide program coordinated by NBS under the authority of the National Standard Data Act (Public Law 90-396).

NOTE: The Journal of Physical and Chemical Reference Data (JPCRD) is published quarterly for NBS by the American Chemical Society (ACS) and the American Institute of Physics (AIP). Subscriptions, reprints, and supplements are available from ACS, 1155 Sixteenth St., NW, Washington, DC 20056.

Building Science Series—Disseminates technical information developed at the Bureau on building materials, components, systems, and whole structures. The series presents research results, test methods, and performance criteria related to the structural and environmental functions and the durability and safety characteristics of building elements and systems.

Technical Notes—Studies or reports which are complete in themselves but restrictive in their treatment of a subject. Analogous to monographs but not so comprehensive in scope or definitive in treatment of the subject area. Often serve as a vehicle for final reports of work performed at NBS under the sponsorship of other government agencies.

Voluntary Product Standards—Developed under procedures published by the Department of Commerce in Part 10, Title 15, of the Code of Federal Regulations. The standards establish nationally recognized requirements for products, and provide all concerned interests with a basis for common understanding of the characteristics of the products. NBS administers this program as a supplement to the activities of the private sector standardizing organizations.

Consumer Information Series—Practical information, based on NBS research and experience, covering areas of interest to the consumer. Easily understandable language and illustrations provide useful background knowledge for shopping in today's technological marketplace.

Order the above NBS publications from: Superintendent of Documents, Government Printing Office, Washington, DC 20402.

Order the following NBS publications—FIPS and NBSIR's—from the National Technical Information Service, Springfield, VA 22161.

Federal Information Processing Standards Publications (FIPS PUB)—Publications in this series collectively constitute the Federal Information Processing Standards Register. The Register serves as the official source of information in the Federal Government regarding standards issued by NBS pursuant to the Federal Property and Administrative Services Act of 1949 as amended, Public Law 89-306 (79 Stat. 1127), and as implemented by Executive Order 11717 (38 FR 12315, dated May 11, 1973) and Part 6 of Title 15 CFR (Code of Federal Regulations).

NBS Interagency Reports (NBSIR)—A special series of interim or final reports on work performed by NBS for outside sponsors (both government and non-government). In general, initial distribution is handled by the sponsor; public distribution is by the National Technical Information Service, Springfield, VA 22161, in paper copy or microfiche form.

U.S. DEPARTMENT OF COMMERCE
National Technical Information Service
5285 Port Royal Road
Springfield, Virginia 22161

OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF COMMERCE
COM-211



3rd Class Bulk Rate